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**D E C I S I O N**  
**of 17 November 1999**

**Case Number:** T 0003/97 - 3.4.2

**Application Number:** 91919432.4

**Publication Number:** 0554341

**IPC:** G02C 1/02

**Language of the proceedings:** EN

**Title of invention:**  
Spectacles

**Patentee:**  
Houmand, Jan

**Opponent:**  
Lindberg Optic Design A/S

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56, 107

**Keyword:**  
"Inventive step - (no) competence of skilled person"  
"Parties to appeal - withdrawal of opposition"

**Decisions cited:**  
T 0789/89

**Catchword:**  
-



Case Number: T 0003/97 - 3.4.2

**D E C I S I O N**  
**of the Technical Board of Appeal 3.4.2**  
**of 17 November 1999**

**Appellant:** Houmand, Jan  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office dated 30 October 1996  
revoking European patent No. 0 554 341 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** E. Turrini  
**Members:** S. V. Steinbrener  
B. Schachenmann

## Summary of Facts and Submissions

- I. The appellant (= proprietor of the patent) lodged an appeal against the decision of the Opposition Division revoking European patent No. 0 554 341 (Application No. 91 919 432.4).
- II. An opposition had been filed against the patent as a whole and based on Article 100(a) EPC since the subject matter of the patent in suit allegedly lacked novelty and inventive step, respectively.

The Opposition Division held that the grounds for opposition mentioned in Article 100(a) EPC prejudiced the maintenance of the patent in that the subject matter of claim 1 as granted in accordance with the main request or as amended in accordance with the auxiliary requests did not involve an inventive step when taking account of the following documents (using the numbering of the Opposition Division):

D1: FR-A-1 121 696

D2: JP-U-1-38 574 (and English translation thereof (= document D2a) furnished by the opponent with the notice of opposition), and

D3: WO-A-87/04 806.

- III. During the appeal proceedings, the Board referred to the following further document:

D4: FR-A-1 087 904

which had already been cited in the notice of opposition.

- IV. In the communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal annexed to the summons dated 12 August 1999, the Board pointed out that in its provisional view amended claims 1, 4 and 5 submitted by the appellant with the statement of grounds of appeal offended against Article 123(2) EPC.

Furthermore, the subject matter of claim 1 seemed to differ from the closest prior art, i.e. document D2 in combination with its English translation D2a, only by simple workshop modifications which were e.g. known from document D1 disclosing the possibility of using bent eyelets and screws as a fastening means for connecting lenses to a wire frame. The Board therefore considered the existence of an inventive step to be questionable. Finally, the additional features of the dependent claims were not seen to provide any supplementary support for patentability.

- V. The respondent (= opponent) who had advanced counter-arguments against the appellant's grounds of appeal with its letter dated 4 July 1997, withdrew the opposition by the letter of 15 July 1999.

- VI. In reaction to the Board's communication, the appellant filed an amended set of claims and informed the Board of his intention to practically demonstrate the different amount of mechanical stresses present in lens mountings according to the patent in suit and the prior art, respectively, at the scheduled oral proceedings.

VII. Oral proceedings took place on 17 November 1999, at the end of which the Board's decision was given.

VIII. The appellant requested that the decision under appeal be set aside, and that the patent be maintained in amended form on the basis of the set of claims submitted at the oral proceedings.

IX. The wording of claim 1 on file at the time of the present decision reads as follows:

"1. Spectacles having two lenses (3, 15) each connected to a temple (2, 14) by means of a temple mounting member, and a bridge (7, 22) interconnecting the lenses, the temples (2, 14), the temple mounting members (6, 16) and the bridge (7, 22) being made of wire material, **characterized** in

i) that the lenses (3, 15) are made of a plastic material in which lenses (3, 15) threaded bores (11) are drilled directly between the front and back thereof,

ii) that the temple mounting members (6, 16) are made of single piece wire material curved or bent to provide eyelets (4) for supporting the heads of respective screws (8), and are connected through bent portions thereof and hinge joints to the temples (2, 14),

iii) that the bridge (7, 22) is made of single piece wire material curved or bent to provide eyelets (5) for supporting the heads of respective screws (9), and

iv) that the temple mounting members (3, 16) and the bridge (7, 22) are connected to the lenses (3, 15)

by means of said respective screws (8, 9) received in said eyelets (4, 5) of said temple mounting members and said bridge, respectively, each of said respective screws comprising a shaft of a yielding plastic material adapted for form-fit engagement with a respective threaded bore (11) and comprising said head, which screws (8, 9) are screwed into the threaded bores (11) so as to hold the lenses (3, 15) and the temple mounting members (6, 16) firmly together, and the lenses (3, 15) and the bridge (7, 22) firmly together."

Claims 2 to 7 are appended to claim 1.

- X. The appellant's argument in support of his requests may be summarised as follows:

The state of the art acknowledged in the introductory part of the patent specification is to a great extent equivalent to that considered in the present appeal proceedings. In particular, document D1 does not disclose any relevant additional subject matter, and the prior art referred to in document D2 corresponds more or less to GB-A-760 625 cited in the patent in suit.

The object specified in the contested patent originates from the prior art as disclosed in document D3. A reduced risk of breaking or splitting for the lenses must be understood to mean the prevention of mechanical stresses in the lenses. As can be seen from the state of stresses of mounted lenses, which has been made visible at the oral proceedings for different mounting concepts with the aid of an optical standard instrument utilising polarised light, the lens mounting disclosed

in document D3 suffers from severe stress problems, whereas the above object is clearly achieved by the teaching of the patent in suit.

Having regard to document D1, there are a number of important differences. In particular, the holes are not threaded in D1, but the screws are fixed by nuts. Therefore, the lens material must be glass in the prior art.

Furthermore, the frame disclosed in D1 consists of two elements, i.e. a presumably planar front element 1 extending between the temples and a supporting wire element 4 integrated with element 1 for increasing the frame stiffness. It must be underlined that plate frames have stiffness properties entirely different from those of thin wire frames and therefore would not be taken into account by a skilled person concerned with problems of the latter.

Even if element 1 as shown in Figures 6 and 7 of D1 were considered to consist of wire as well, then this element cannot be said to have eyelets. On the other hand, the supporting element 4 having eyelets is not connected to the temples "through bent portions thereof and hinge portions", but only via front element 1.

The technology of document D2 also relates to plate frames having punched-out or soldered protrusions. Although it is assumed in the impugned decision that the lenses of D2 consist of plastic material, the appellant is not convinced that this is the case since the prior art technique of forming the heads of the fastening elements is not suitable for plastic lenses

due to the relatively high melting point of nylon. Document D2 must be read in its entirety. It starts from the "flexible rivet" solution having the advantage of crack prevention due to the elasticity of the rivet material, and the shortcomings of dirt accumulation due to the rivet heads and abrasion of lens coatings by said heads due to the free motion of the rivets in their holes. In order to overcome these drawbacks, document D2 provides a rivet-like nylon pin in combination with a threaded bore, the pin being forced into the threaded bore in order to hold lenses and frame firmly together with the aid of heads formed after insertion of the pins.

As the appellant has established by tests and demonstrated at the oral proceedings, a firm integration is indeed achieved by the prior art, and the deformed pins are difficult to unscrew. However, although there may be some flexibility due to the nylon material, the problem underlying the patent in suit is not solved since severe stresses are caused in the lens material by jamming the pin into the threaded bore, in particular if the lens consists of conventional plastic material (which is, however, not admitted to be disclosed in D2).

The reason for the generation of these stresses is quite plausible: the elastic nylon pin having a greater diameter than the threaded bore is not perfectly cut by the thread of the bore since the lens material is not hard and sharp enough, but partly squeezed. Although it is true that the amount of cutting and squeezing depends on various material parameters like the respective Shore hardnesses, the respective elastic



properties and the respective geometric dimensions, generation of a certain amount of stresses in the lenses is inherent to the method of document D2. According to the patent in suit, such stresses are avoided by using perfect screws as has also been demonstrated at the oral proceedings.

Therefore, starting from D1, a skilled person would realise that the problem of stress prevention is not solved in D2 and consequently would discard the teaching of D2, in particular the use of threaded bores. Since it is not foreseeable for a skilled person that no such stresses are generated by the tightening of screws, he would go in a different direction, e.g. by reconsidering the use of rivets or nuts and bolts.

## **Reasons for the Decision**

### *1. Admissibility of Appeal*

The appeal meets the requirements of Rule 65 EPC and is therefore admissible.

### *2. Withdrawal of the opposition*

In accordance with established case law of the boards of appeal, withdrawal of an opposition does not affect appeal proceedings if the opponent is the respondent (see the decisions referred to in "Case Law of the Boards of Appeal of the European Patent Office", 3rd edition 1998, European Patent Office 1999, Chapter VII, D-11.2). As a consequence of the

withdrawal, the respondent and former opponent ceases to be party to the appeal proceedings as far as the substantive issues are concerned (see T 789/89, OJ EPO 1994, 482).

3. *Articles 123 and 84 EPC*

The Board considers the amended version of the claims to comply with the requirements of Article 123 EPC and to be sufficiently clear.

4. *Article 54 EPC*

The Board also holds the view that the claimed subject matter is novel with respect to the available prior art as can be seen from the following discussion of inventive step. In fact, novelty has not been contested in the present proceedings.

5. *Article 56 EPC*

5.1 Closest prior art

5.1.1 In the Board's opinion document D2 (in combination with its English translation D2a) comes closest to the subject matter of claim 1. This document already relates to the problem defined in the patent in suit (see column 2, lines 5 to 11 of the contested patent and page 5, last paragraph to page 6, first paragraph of document D2a) and provides at least a partial solution to said problem as will be pointed out below.

5.1.2 Document D2 (see Figures 1 and 2 and associated text of D2a) already discloses spectacles having two lenses 5

(only one is shown in the Figures, however a symmetrical configuration must be considered implicit to a skilled person), each connected to a temple 4 by means of a temple mounting member, and a bridge interconnecting the lenses, the temple mounting members and the bridge being formed by an interconnected metal frame 1 as is the case in Figure 1 of the patent in suit. It is admitted that in D2/D2a neither the temples nor frame 1 are described to be made of wire material, and that the temples as shown in the Figures certainly do not have a wire-like appearance. However, judging from the Figures, frame 1 gives well the impression of a slender flexible rod which falls under the definition of wire material. In the Board's view, apart from the fact that Figures 3 and 4 of D2 appear to be schematic, a skilled person, i.e. in the present case a spectacle designer having the necessary extent of mechanical and optical knowledge, would not necessarily assume a circular cross-section for wire material, nor would the fastening of protrusions to a wire frame, e.g. by soldering, be excluded as the appellant believes. Therefore, the Board considers the temple mounting members and the bridge of the prior art spectacles, i.e. frame 1, to be also made of wire material. Such material is in any case conventional in the technical field concerned as can be seen from all of the remaining documents identified above.

The lenses of the known spectacles are also provided with threaded bores 6 drilled directly in the lenses between the front and back thereof. From this fact, it must be concluded that the prior art lenses are made of a plastic material since the formation of threaded bores would be rather difficult in optical glasses. The

forming of heads on the nylon pins in accordance with the prior art does not seem to conflict with this conclusion since careful local application of heat to the nylon pin should be compatible with plastics lenses as well. In any case, lenses of transparent plastic material are well-known in the art (see e.g. document D4) and would be a skilled person's first choice if threaded bores were to be formed.

Furthermore, in accordance with the above conclusions, the known temple mounting members and the bridge, i.e. frame 1, are also made of single piece wire material and are provided with eyelets 2, 3 for supporting the heads 8 (see Figure 4) of respective engagement members (nylon pins) 7, and frame 1 is connected through bent portions thereof and hinge joints 13 to the temples 4.

Finally, frame 1 is connected to the lenses 5 by means of said respective engagement members 7 received in said eyelets 2, 3, each of said respective engagement members 7 comprising a shaft of a yielding plastic material (nylon) adapted for form-fit engagement with a respective threaded bore 6 and comprising said head 8, which engagement members 7 are screwed (= inserted by turning) into the threaded bores 6 so as to hold the lenses 5 and the frame 1 firmly together (see D2a, page 5 to page 6, first paragraph).

5.1.3 In consequence, the subject matter of claim 1 differs from the closest prior art essentially in that

- (i) the temples are made of wire material whereas the known temples have a plate-like configuration;

- (ii) the eyelets are formed by curving or bending the wire material of the frame whereas the known eyelets are protrusions of the frame, the way they are formed with, or connected to, the frame being not disclosed in D2; and
  
- (iii) the lenses are connected to the frames by means of screws whereas the known "engagement members" are plain thin nylon pins which are "screwed" by force into the threaded bores and provided with a head only after the screw-in operation.

## 5.2 The technical problem

- 5.2.1 The problem solved by feature (i) may be seen in an alternative construction which possibly lends itself to simplified production.
  
- 5.2.2 Difference (ii) also seems to relate to an alternative design which may be correlated with a higher overall elasticity of the lens mounting.
  
- 5.2.3 As has been demonstrated by the appellant at the oral proceedings, remaining feature (iii) gives rise to the effect that stresses in the lenses caused by the fixing elements themselves are prevented or at least reduced whereas such stresses plausibly exist in the case of the known nylon pins jammed into the threaded bores, thereby being partially cut and partially squeezed. Thus, although the known specific fixing element, i.e. the "screwed-in" nylon pin, already serves the purpose of avoiding damage to the lenses due to its elastic deformation in case of shock after insertion, it may normally be expected to inherently produce a higher

amount of stresses in the lenses when inserted than a real screw. Therefore, the problem of reducing the risk of breaking or splitting the lenses appears to be only partially solved in the prior art, and the effect of feature (iii) may be seen in further improving the result achieved by the teaching of document D2 in that the initial stress state of the mounted lenses caused by the fixing elements is avoided, thereby contributing to the above-mentioned risk reduction.

- 5.2.4 The partial problems derivable from the effects associated with differences (i) to (iii) do not seem to be interrelated, at least insofar as features (i) on one hand and features (ii) and (iii) on the other hand are concerned.

Since the provision of alternatives is trivial, and the drawbacks of the prior art, in particular the phenomenon of stress production, would have been readily discovered by a skilled person when investigating the prior art lens mounting, the formulation of the above problems cannot contribute to the existence of an inventive step. This finding was not contested by the appellant at the oral proceedings.

### 5.3 Assessment of inventive step

- 5.3.1 Starting from document D2, a skilled person would realise that the initial problems of dirt accumulation and abrasion mentioned in D2 have been solved by the use of the specific prior art lens mounting concept. A skilled person would however also realise that stresses exist in the lenses mounted in accordance with the teaching of D2, and that these stresses must be due to

elastic forces exerted by the nylon pin on the walls of the threaded bore. This is all the more so as stresses in the lenses can easily be made visible by means of an optical standard instrument (see point X, supra).

Contrary to the appellant's opinion, the Board is convinced that in such a situation, a normal skilled person would not return to the rivet or nut and bolt solutions in order to solve the stress problem at the expense of revitalising the problems already overcome in D2. A skilled person would rather try to further improve the known mounting concept taking account of the fact that risk of shock damage to the lenses is already reduced by the elasticity of the prior art nylon material.

Nor would a skilled person consider the threaded bore to be the element primarily responsible for producing the stresses observed. In accordance with its mechanical knowledge, the skilled person would associate the stress problem with forces caused by the imperfect fit of the partially cut nylon pin in the thread of the bore as has already been pointed out above since a perfect screw does not cause substantive lateral forces to the threaded walls of the bore when being screwed in, and the final stress state can be easily controlled by regulating the tightening force of the screw. The Board is convinced that this belongs to the basic technical knowledge of the skilled person as defined in point 5.1.2, supra.

In addition, a skilled person must be assumed to be familiar with the conventional technique of fixing lenses to spectacle frames by nuts and bolts (see e.g.

document D1, Figure 6 and associated text or document D4, page 1, left-hand column, second paragraph). Hence, the skilled person would expect a screw connection to be generally suitable for the mounting of lenses, such screw connections consisting either of nuts and bolts or - as an equivalent alternative - of screws and threaded bores.

The Board thus arrives at the conclusion that the substitution of a real screw for the jammed-in nylon pin of D2 would be an obvious remedy to the stress problem encountered in the prior art spectacles.

Moreover, an additional incentive for proceeding in this way may be seen in the fact that the difficulty referred to by the appellant (see also column 1, lines 37 to 46 of the patent in suit) of locally applying heat for forming the heads of the nylon pins without damaging the lens surfaces would also be avoided.

Therefore, the implementation of feature (iii) cannot be considered inventive.

5.3.2 Features (i) and (ii) relate to simple independent workshop modifications which as such in combination with their respective associated effects are well-known in the prior art. This can be seen with respect to

- feature (i) from document D1, Figures 1 and 6 apparently showing wire temples and page 1, left-hand column, second paragraph referring to wire frames in general; document D3, page 2, first and second paragraphs disclosing the advantage of



wire material in general and wire temples in particular in the context of frame production; and document D4, page 1, left-hand column, second paragraph also referring to wire frames in general;

- feature (ii) from document D1, Figure 7 and associated text describing the advantage of bent eyelets  $6_1$  for shock absorption; and document D4, page 1, left-hand column, second paragraph mentioning the fact that lenses are fixed to wire frames most frequently by means of "small ears" through which screws are passed.

The Board therefore holds the view that adopting such alternative design measures falls well within a skilled person's competence. Even if feature (ii) were seen to contribute to crack prevention in a general sense, its separate effect has been described in document D1 so that the collocation of this feature with measure (iii) would constitute an obvious further improvement.

- 5.3.3 Since, starting from document D2 and attempting to solve the partial problems remaining with respect to the closest prior art, none of the above independent differences (i) to (iii) involves an inventive step, claim 1 cannot be considered allowable (Article 56 EPC).

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

P. Martorana

E. Turrini